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Towards energy-efficient offshore platforms

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1 Motivation

- North Sea **oil and gas platforms** responsible for **26%** of the total **CO₂ emissions** of Norway (2011)
- They have a **substantial power consumption: 10 to 100 MW**
- The aim of these offshore facilities is to **separate oil, gas and water** for further refining onshore
- Onsite processes become **less efficient** with time: the contents of **water** and **gas** fluctuate and off-design conditions take place



Figure 1: Picture of the Draugen oil and gas offshore platform (Kristiansund, Norway)

2 Methodology

- Process modelling of the current offshore platforms
- Energy and exergy analysis of the processing and utility systems

- Design of future oil and gas facilities remaining efficient over time

3 Results and discussion

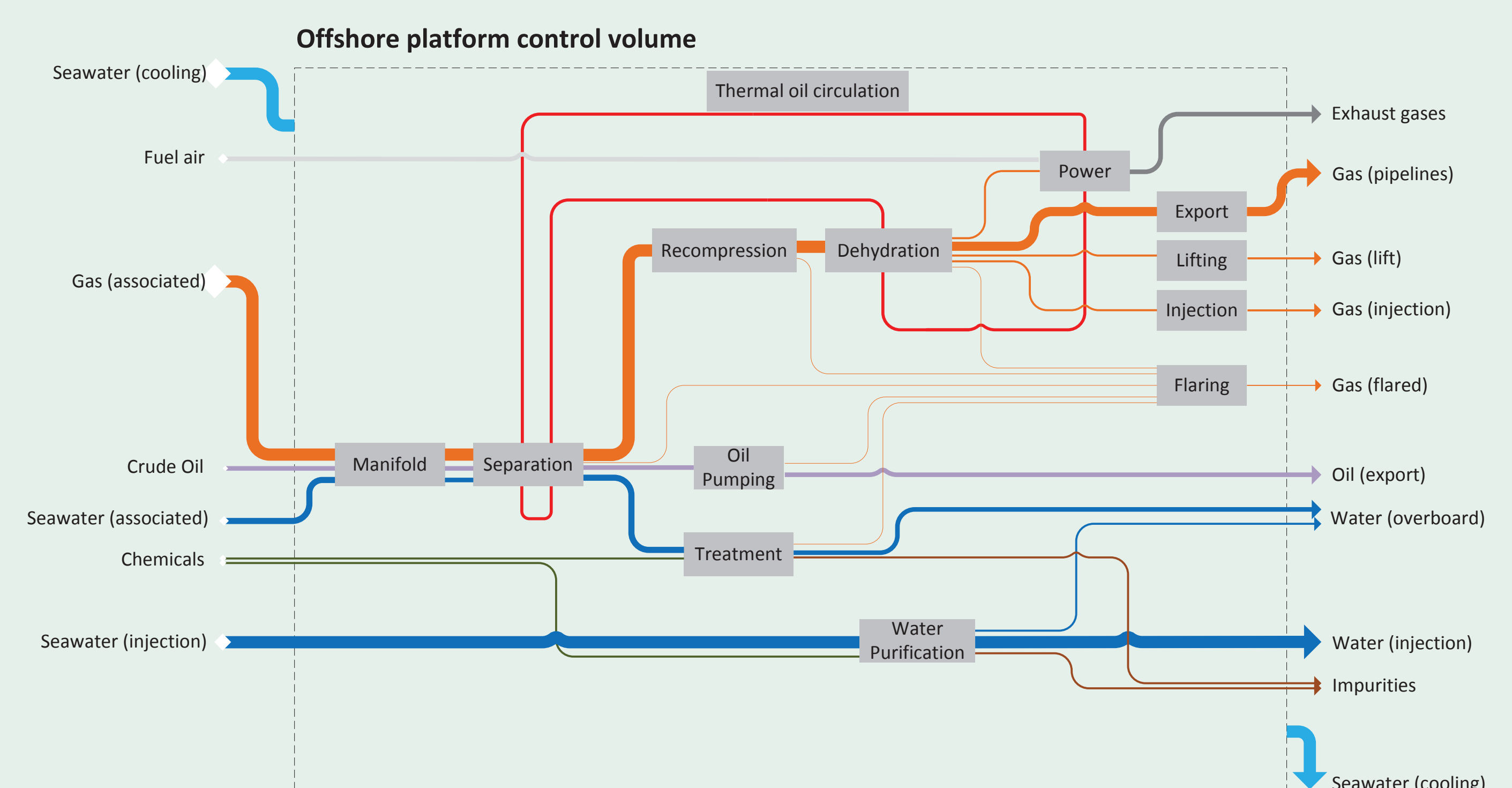


Figure 2: Process model of the offshore platform system

The largest **performance improvement** opportunities lie in a more efficient use of:

1. Combustion chambers of the gas turbines
2. Exhaust gases from the waste heat recovery system
3. Flared gases from the processing plant
4. Production manifold
5. Compressors in the gas compression train

4 Acknowledgements

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